

- N.B.: (1) All questions are compulsory.
(2) Answer to the same questions must be written together.
(3) Numbers to the right indicate marks.
(4) Draw neat labeled diagrams wherever necessary.

1. Attempt the following (any **THREE**) : [15]
(a) Define Operating System. Explain its role.
(b) Explain first two generations of Operating Systems.
(c) Explain arrangement of hardware on Computer.
(d) Explain any three types of Operating Systems.
(e) Explain Monolithic Systems and Layered Systems.
(f) Explain FCFS Scheduling Algorithm with example.
2. Attempt the following (any **THREE**) : [15]
(a) Explain the concept of no memory abstraction.
(b) Explain FIFO Page replacement algorithm with example.
(c) Write a short note on Paging.
(d) Explain any five file operations.
(e) Explain MS-DOS File system.
(f) Describe CD-ROM file system.
3. Attempt the following (any **THREE**) : [15]
(a) Explain principles of I/O Software.
(b) Describe in brief the concept of I/O Software layers with suitable diagram.
(c) Explain the concept of Power Management.
(d) Explain the conditions needed for a deadlock to occur.
(e) Explain how to prevent deadlocks by preventing the conditions for deadlock.
(f) Describe (i) Two-phase locking (ii) Communication Deadlocks
4. Attempt the following (any **THREE**) [15]
(a) Describe the history of virtualization.
(b) Explain the three requirements for virtualization.
(c) With suitable diagrams, explain Type 1 and Type 2 Hypervisors.
(d) List the five essential characteristics of clouds.
(e) Describe in brief Multicomputers i.e. Clustered Computers.
(f) Explain the concept of distributed systems.
5. Attempt the following (any **THREE**) [15]
(a) Describe in brief important steps in history of Unix and Linux.
(b) With a suitable diagram, explain the structure of the Linux Operating System.
(c) Explain the basic concept of process management in Linux.
(d) Describe the Android Operating System.
(e) Draw a table listing the various stages in the history of Windows.
(f) List the six security properties that are implemented in Windows.

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Paper Discussion Schedule for all Subjects

Date	Day	Timing	Centre
26 Nov. 2018	Monday	9.00 a.m. to 11.00 a.m.	Dadar
26 Nov. 2018	Monday	12.00 p.m. to 2.00 p.m.	Thane
26 Nov. 2018	Monday	6.00 p.m. to 8.00 p.m.	Andheri
27 Nov. 2018	Tuesday	6.00 p.m. to 8.00 p.m.	Borivali